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| APPLICATION NO | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO | CONFIRMATION NO |
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| 09 955,517 | 09 18 2001 | Cyrus E. Tabery | G0228 | 8552 |

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07 21 2003

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EXAMINER

HASSANZADEH, PARVIZ

ART UNIT PAPER NUMBER

1763

DATE MAILED: 07 21 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,517

Applicant(s)

TABERY ET AL.

Examiner

Parviz Hassanzadeh

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 21-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☒ Other: *decision on TD*

SUBJECT DECISION ON TERMINAL DISCLAIMER INFORMAL FORM

DATE: 7.1.03

APPL. S.N.: _____

EXAMINER: _____

ART UNIT: 1763

PARALEGAL: BRIAN HARDEN

MAILROOM DATE: 6.24.03

AFTER FINAL: YES _____ NO _____

NUMBER OF T.D.(S) FILED: _____

INSTRUCTIONS: I have reviewed the submitted T. D. with the results as set forth below. If you agree, please use the appropriate form paragraphs identified by this informal memo in your next office action to notify applicant about the T. D. If you disagree any analysis or have questions at all about the acceptability of the T.D., please see our Special Program Examiner or me.

THIS MEMO IS AN INFORMAL, INTERNAL MEMO ONLY. IT MUST NOT BE MAILED TO APPLICANT, NOR SHOULD A COPY BE LEFT IN FILE. WHEN YOUR OFFICE ACTION IS COMPLETED, YOU MUST INITIAL AND DATE & RETURN THIS TO PARALEGAL.

☐ The T. D. is PROPER and has been recorded. (See 14.23)

☒ The T.D. is NOT PROPER and has not been accepted for the reason(s) checked below. (See 14.24)

☐ The recording fee of \$ _____ has not been submitted nor is there any pre authorization in the application to charge to a deposit account. (See 14.25)

☐ Application Examiner has not processed fee for T. D.

☒ The T.D. does not satisfy Rule 321(b)(3) in that the person who has signed the T. D. has not stated his/her interest and the extent of the interest of the business entity represented by the signature in the application/patent. (See 14.26)

☐ The T. D. lacks the enforceable only during the common ownership clause needed to overcome a double patenting Rule 321(c). (See 14.27 and 14.27.1)

☐ T. D. is directed to a particular claim(s), which is not acceptable since the disclaimer must be of a terminal portion of the entire patent to be granted, MPEP 1490. (See 14.26 and 14.26.2)

☐ The person who signed the terminal disclaimer:

- ☐ has failed to state his/her capacity to sign for the business entity. (See 14.28)
- ☐ is not recognized as an officer of the assignee. (See 14.29.1)

☐ No documentary evidence of a chain of title from the original inventor(s) to assignee has been submitted, nor is the frame specified as to where such evidence is recorded in the office. 37CFR 3.73(b). (See 1140 O.G. 72) NOTE: This documentary evidence or the specifying of the reel and frame may be found in the T.D. or in a separate paper submitted by applicant. (See 14.30)

☐ No "STATEMENT" specifying that the evidentiary documents have been reviewed and that, to the best of the assignee knowledge and behalf the file is in the assignee seeking to take action 37 CFR 3.73(b). (See 1140 O.G. 72)

☐ The T. D. is not signed (See 14.26 and 14.26.3)

☐ Attorney is not of record in the oath/declaration or a separate paper filed appointing a new or associate attorney, nor is there a customer number.

☐ The serial number of the application (or the number of the patent) which forms the basis for the double patenting is missing or incorrect. (See 14.32)

☐ The serial number of this application (or the number of the patent in reexam or reissue case(s) being disclaimed is missing or incorrect. (See 14.26, 14.26.4 or 14.26.6)

☐ The period disclaimed is incorrect or not specified. (See 14.27, 14.27.2 or 14.27.3)

☐ Other _____

DETAILED ACTION

Election/Restrictions

Applicant's election of Group I, apparatus claims 1-20 and 25, in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 21-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 15-20, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by
Latos (US Patent No. 4,208,240).

Latos teaches a plasma etch reactor (Fig. 1) comprising:
a plasma etch source 18 (*one fabricating component operative to fabricate one or more mask features; a fabrication component driving system operably connected to the fabrication*

Art Unit: 1763

component, the fabrication component driving system operable to drive the fabricating component);

an optical monitoring system including: a laser source 22 (*a system for directing light on to at least one of the one or more features*),

a photo-detector 28, and a processor 42 for processing comparing the detected signal with an end point criteria 44, wherein the comparator 42 is in communication with the plasma etch source 18 (*a measuring system for measuring feature parameters based on a light reflected from the feature*) (column 3, line 9 through column 4, line 18).

Further regarding claims 2, 3: the system including the comparator 42 is in communication with the plasma etch source 18 and the detector 28 (column 3, line 9 through column 4, line 18).

Further regarding claims 4, 5, 7, 8: the apparatus includes a plasma etch reactor 18 for etching layers 14 and 16 in a predetermined pattern using photolithography technique (column 3, line 9 through column 4, line 18). The type of pattern being an aperture and a grating is considered a process limitation. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

Art Unit: 1763

Further regarding claim 6: the apparatus includes a photo-detector for measuring reflected light from the surface of the substrate during etching (column 3, line 9 through column 4, line 18).

Further regarding claims 16-20, 25: the depth of the etching layers is sensed by the optical system (*means for sensing at least depth of an aperture*). The apparatus includes plasma etch source 18 (*means for etching*) and digital comparator in communication with an end point criteria unit 44 and the plasma source (*means for selectively controlling the etching*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Latos (US Patent No. 4,208,240) in view of Niu et al (Specular Spectroscopic scatterometry in DUV Lithography).

Art Unit: 1763

Latos teaches all limitations of the claims as discussed above except for the processor maps the mask into a plurality of grid blocks and makes a determination of fabrication conditions at the one or more grid blocks.

Niu et al teach a scatterometry system wherein a profile of a grating system is measured and compared to a predetermined profile (the entire document).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the scatterometry system as taught by Niu et al in the apparatus of Latos in order to perform profile analysis on the entire surface of the etching layer.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 and 25 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 09/893,271. Although the conflicting claims are not identical, they are not patentably distinct from each other because the special technical features of the apparatuses (apparatus structures) are essentially the same.

Claims 1-20 and 25 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13, 25, 26 of copending Application No. 09/893,186. Although the conflicting claims are not identical, they are not patentably distinct from each other because the special technical features of the apparatuses (apparatus structures) are essentially the same.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments filed 6/24/03 have been fully considered but they are not persuasive.

Applicants assert that claims 1, 15 and 25 recite a system for monitoring the etching of apertures in an alternative phase shift mask (AAPSM).

The Examiner argues that the recitation "for monitoring the etching of apertures in an alternative phase shift mask (AAPSM)" is simply an intended use of the system rather than an structural limitation. Furthermore, inclusion of material or article worked upon by a structure does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Applicants assert that Latos does not teach or suggest a system which measures a *plurality of features* at substantially the same time *such as depth, width, shape and trench wall slopes of apertures* as recited in claims 1, 15 and 25.

The Examiner argues that claims 1, 15 and 25 requires at least one feature rather than a plurality of features, and further claims 1, 15 and 25 do not recite simultaneous measurement of a plurality of features being *depth, width, shape and trench wall slopes of apertures*.

Regarding Terminal Disclaimer: the terminal disclaimer received on 6/24/03 has not been accepted. See the enclosed form "Subject Decision on Terminal Disclaimer Informal Form".

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Aspnes et al (US Patent No. 4,332,833) teach a process reactor which the operation thereof is controlled based on a measured reflected light,

Art Unit: 1763

Kleinknecht (US Patent No. 4,039,370) teach an optical system for monitoring an etching of a layer beneath a masking material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (703)308-2050. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703)308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Parviz Hassanzadeh
Parviz Hassanzadeh
Primary Examiner
Art Unit 1763

July 18, 2003